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PHYSIOLOGY.[1]

THE DELICACY OF THE SENSE OF SMELL.—The sense of smell is probably the leading sensorial endowment in most insects, and it does for them what sight and hearing do for man. Its potency in helping along intelligence is very great, since we know that mentally insects stand at the head of the invertebrate, as man stands at the head of the vertebrate world. The sense of smell is probably acute in some fishes, as, for example, the shark: this is the most active if not the most intelligent of fishes, and it has an olfactory mucous membrane which if spread out would cover some twelve square feet. The sense falls in value in the Amphibia, reptiles and birds, but rises again in the Mammalia, though not in proportion to intelligence. Its extreme acuteness in the dog, the most intelligent of animals short of Quadrumana, is well known. In man, the sense of smell is subordinate, and even rudimentary. Olfaction adds to man's enjoyment, preserves him from some dangers, but does not very much extend his knowledge of his environment.

Yet despite the comparative insignificance of this sense in man, its delicacy is most marvelous, and by it we can appreciate more minute subdivisions of matter or the impact of more infinitesimal molecular vibrations than by any other of the avenues to the brain.

Professor Valentine has made some interesting and striking experiments in proof of this. He found that a current of air containing 1-30,000 milligramme of bromine, or 1-500,000 milligramme of sulphureted hydrogen, or 1-2,000,000 milligramme of oil of roses could be perceived by the sense of smell. He also determined that the amount of odoriferous air which must pass over the olfactory membrane in order to excite the sense of smell was from fifty to one hundred cubic centimeters (one-tenth to one-fifth of a pint). He calculated, therefore, that the actual amount of bromine necessary to excite a sense of smell was 1-6000 milligramme, of sulphureted hydrogen 1-5000 milligramme of oil of roses 1-20,000 milligramme (about 1-120,000 of a grain).

Two recent experimenters, E. Fisher and F. Pentzoldt, of Erlangen, have found two other substances which far exceed the foregoing in their capacity for affecting the olfactory nerves. These were mercaptan (sulphureted alcohol) and chlorphenol. They found that in air containing 1-230,000,000 milligramme to the cubic centimeter of chlorphenol, and 1-23,000,000,000 milligramme of mercaptan, these substances could be appreciated, and it was estimated that only 1-4,600,000 milligramme. of chlorphenol, and 1-460,000,000 milligramme of mercaptan, is necessary to excite a sensation of smell. There exists, therefore, a substance which in so small a subdivision as 1-2,760,000,000 grain, or not quite one three-billionth of a grain, is capable of calling out a nerve impulse. This subdivision of matter is quite beyond comprehension, yet the nose alone can appreciate it. The smallest subdivision appreciable by the eye through the spectroscope is 1-1,400,000 milligramme of sodium, which is a two hundred and fifty times coarser division of matter than the minimum of odor-exciting mercaptan.

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[1] This department is edited by Professor HENRY SEWALL, of Ann Arbor, Michigan.

On account of the extraordinary power of mercaptan it is proposed to put it to some practical use in testing currents of air, ventilation, etc.—*Medical Record.*

PSYCHOLOGY.

CANINE REASON.—S. N. Maxcy, of Gardiner, Maine, has a black-and-tan dog which is very intelligent. He has all the accomplishments a common dog has and knows several besides. The screen door of the house opens outward, and Dick can open it from the outside, pulling it with his teeth. The other day he approached the door with a bone in his mouth. He couldn't open the door while he held the bone, and if he couldn't have the bone he didn't care to open it. He looked at it a minute, then laying the bone down near the door, pulled the door open and went in. He then turned and pushed the door wide open, and before it could swing to again, had grabbed up his bone and got inside.—*Exchange.*

A bird dog owned in this town, though we doubt much if he has been shot over, is in the habit of making furious dashes at the doves feeding in the streets, and of course the birds are too quick for him. The other day he watched his opportunity in this wise. The dog saw the doves, and also saw a team approaching; he waited until the team was between himself and the birds, then he made a tremendous rush between the wheels, and the birds not seeing his first leap were taken in a heap of surprise, and one dove was nearly captured.

Both these cases look a trifle like an exercise of the reasoning power.

Since the above was written (it was prepared for last week's issue) another capital story has come to our knowledge. Dr. C. A. Packard, of Bath, owns a setter of very fine blood, when young a capital bird dog, but too old now to hunt. He runs with the carriage for short drives occasionally. One day when on the road poor "Flash" had the misfortune to nearly tear out one of his nails, and the doctor was obliged to use the bone forceps to remove the nail. Flash stood the operation "like a major," never wincing. Not long after this the doctor heard the well-recognized rap of Flash on the office door for admission. It was opened and in came Flash, accompanied by a small dog with a bad wound upon one leg, and Flash brought the dog up before his